

**FOSSIL TYPHA IN AUSTRALIA.** *Memoirs of the Queensland Museum* 45(2): 234, 2000:- Recent investigation of oil shales recovered from a bore put down in the Casuarina Basin, about 25km SE of Rockhampton, Queensland has revealed seeds and fruits in the sediments. These were encountered in the course of a palynological study and would have otherwise been overlooked on account of their small size. In a forthcoming paper the seeds have been assigned to Typhaceae and the fruits to Restionaceae (Dettmann & Clifford, in press). Because seeds of Typhaceae are operculate it is important they not be confused with moss capsules. The two are usually readily distinguished: unlike a seed the moss capsule is usually attached to a seta and has a peristome which is revealed when the operculum separates from the theca. However, if the moss capsule has become detached from its seta and lacks a peristome it will resemble a *Typha* seed whose chalazal region has been damaged. These considerations led us to reconsider the identity of *Muscites yallournensis* Clifford & Cookson which was described on the basis of a single specimen isolated from a sample of brown coal (Clifford & Cookson, 1953) of Miocene age from Yallourn (Blackburn & Sluiter, 1994).

A comparison of the cell structure of the operculum of *M. yallournensis* with that of the extant *Typha domingensis* Pers. revealed no significant differences (Fig. 1). Further support for the view that the specimen of *M. yallournensis* is a seed of *Typha* rather than a moss capsule is provided by the collar of cells from within which the operculum is shed and the ragged skirt of cells around the base of the supposed 'capsule'. Both of these are features of *Typha* seeds and are clearly visible on the photograph of the holotype of *M. yallournensis*. Accordingly, the species is here formally transferred to that genus.

#### Systematic Palaeobotany

##### TYPHACEAE

*Typha yallournensis* (Clifford & Cookson) comb. nov.  
(Fig. 1A-C)

*Muscites yallournensis* Clifford & Cookson, 1953: 54-55.

**MATERIAL.** HOLOTYPE: NMV P15724; Latrobe Valley Coal Measures, Yallourn Seam; Miocene.

**REMARKS.** There are no previous reports of *Typha* (type species *T. latifolia* L.) from the Australian fossil flora though MacPhail et al. (1994) and Blackburn & Sluiter (1994) report the presence of macro- and/or microfossils with affinities to Typhaceae and Sparganiaceae but make no positive identifications to either. Therefore *Typha yallournensis* (Clifford & Cookson) comb. nov. becomes the first definite fossil record of the genus from Australia.

Elsewhere fossil *Typha* seeds have been described from Maastrichtian and younger sediments of Europe (Chandler, 1963; Collinson, 1983; Herendeen & Crane, 1995). Seeds of *T. latissima* A. Braun closely resemble those of *T. yallournensis* but until the anatomy of the latter is known the two species cannot be regarded as conspecific.

#### Acknowledgements

We thank the Director of the Museum of Victoria and Dr S. McLoughlin, University of Melbourne for arranging access to the negative of the holotype of *Typha yallournensis*.

#### Literature Cited

- BLACKBURN, D.J. & SLUITER, I.R.K. 1994. The Oligo-Miocene floras of south-eastern Australia. Pp. 328-367. In Hill, R.S. (ed.) History of the Australian vegetation: Cretaceous to Recent. (Cambridge University Press: Cambridge).
- CHANDLER, M.E.J. 1963. Revision of the Oligocene floras of the Isle of Wight. Bulletin of the British Museum (Natural History) Geology, London 6: 321-384.
- CLIFFORD, H.T. & COOKSON, I.C. 1953. *Muscites yallournensis*, a

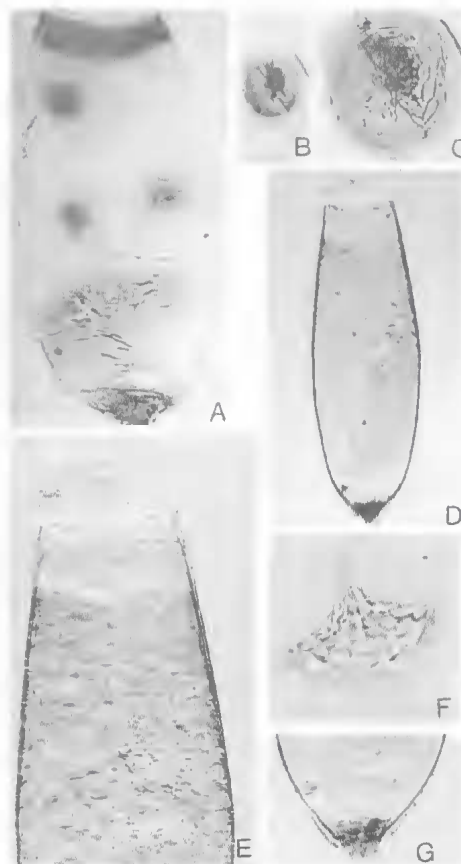


FIG. 1. *Typha yallournensis* (Clifford & Cookson) comb. nov. and *T. domingensis* Pers. A-C, *T. yallournensis*, holotype (NMV P15724). A, seed body showing chalazal region at base ( $\times 60$ ). B-C, detached operculum ( $\times 60$  and  $\times 120$ ). D-G, *T. domingensis*. D, E, G, QM F50036 seed showing partially detached operculum and chalazal region at base (D,  $\times 33$ , E,  $\times 133$ , G,  $\times 50$ ). F, specimen QM F50037, detached operculum in lateral view ( $\times 133$ ).

fossil moss capsule from Yallourn, Victoria. *The Bryologist* 56: 53-55.

- COLLINSON, M.E. 1983. Palaeofloristic assemblages and palaeoecology of the Lower Oligocene Bembridge Marls, Hamstead Ledge, Isle of Wight. *Botanical Journal of the Linnean Society* 86: 177-225.
- DETTMANN, M.E. & CLIFFORD, H.T. in press. Monocotyledon fruits and seeds and an associated palynoflora from Eocene/Oligocene sediments of coastal central Queensland, Australia. *Review of Palaeobotany and Palynology*.
- HERENDEEN, P.S. & CRANE, P.R. 1995. The fossil history of the monocotyledons. Pp.1-21. In Rudall, P.J., Cribb, P.J., Cribb, D.F. & Humphries, C.J. (eds) *Monocotyledons: systematics and evolution*. (Royal Botanic Gardens: Kew).
- MACPHAIL, M.K., ALLEY, M.F., TRUSWELL, E.M. & SLUITER, I.R.K. 1994. Early Tertiary vegetation: evidence from spores and pollen. Pp.189-261. In Hill, R.S. (ed.) *History of the Australian vegetation: Cretaceous to Recent*. (Cambridge University Press: Cambridge).

H. Trevor Clifford, Queensland Museum, PO Box 3300, South Brisbane 4101, Australia. Mary E. Dettmann, The University of Queensland, St Lucia, 4072, Australia. 11 January 2000.